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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Michel Beauvy

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BRINKS, HOFER, GILSON & LIONE  
P.O. BOX 1340  
MORRISVILLE, NC 27560

EXAMINER

SCHIRO, RYAN RAYMOND

ART UNIT

PAPER NUMBER

1792

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/534,611	<b>Applicant(s)</b> BEAUVY ET AL.	
	<b>Examiner</b> RYAN SCHIRO	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 41-45 and 47-89 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-45 and 47-89 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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### **DETAILED ACTION**

Claims 41 and 67 were amended and claim 46 was cancelled in the supplemental amendment received on August 25, 2009. Claims Claims 41-45 and 47-89 are pending and presented for examination.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 41-45 and 49-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cramer et al. (US 3003952) in view of Csordas (US 2982614).

4. Cramer teaches a method of manufacturing platinum-alumina catalysts by contacting substantially pure aluminum metal with metallic mercury or a mercury compound, as required by claims 41, 49 and 67 (col. 1 and 2, lines 70-5). The resulting alumina is brought into contact with a solution of a platinum compound, as required by claim 41 and 67. The object of the

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invention is to eliminate the need for washing and filtration to remove the impurities in the alumina (col. 1, lines 48-51). Aluminum alloys may be used but the aluminum preferably has a purity of generally 99.99% or greater, as required by claims 41, 45 and 67 (col. 2, lines 60-72). Aluminum in sheet or ribbon form is suitable, as well as large pieces or ingots, which is the same as monolithic, as required by claim 41 (col. 3, lines 10-17). Other noble metals such as palladium, rhodium, ruthenium, osmium and iridium may be used, as required by claim 41 and 67 (col. 5, lines 35-40). Basic mercuric salts, as well as other mercuric compounds may be used, as required by claim 50 (col. 3, lines 48-61). The platinum may be present as chloroplatinic acid or other suitable forms such as platinum cyanide, platinum sulfide, platinum hydroxide or platinum oxide, some of which are salts, as required by claim 50 (col. 5, lines 63-68).

5. Cramer does not teach that the surface is exposed to a wet oxidizing atmosphere, as required by claim 41 and 51-53. Cramer does not teach the temperature parameters and amalgam reusing process, as required by claims 42-44.

6. Csordas teaches a process for producing alumina in which the surface of an aluminum body is amalgamated and exposed to oxygen and water vapor, as required by claim 41 (col. 1, lines 53-58). The amalgam is usefully produced by contacting, for example by dipping the aluminum body into an aqueous solution of a mercuric salt, as required by claims 49 and 50 (col. 1, lines 60-64). It is then rinsed with water and dried with an airstream saturated with water vapor at a temperature of approximately 30 degrees C, as required by claims 41 and 51-53 (col. 1, lines 63-70). The aluminum substrate blocks are provided with a cooling system, as

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required by claims 42 and 43 (col. 2, lines 3-6). The mercury may be removed by rinsing and reapplied to repeat the process, as required by claim 44 (col. 3, lines 1-4).

7. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to expose the substrate coated in the method taught by Cramer to a wet oxidizing atmosphere, temperature parameters and mercury reusing process as taught by Csordas, as required by claims 41-44 and 51-53. One would have been motivated to combine the teachings of Cramer and Csordas because Csordas provides an alternative method to making alumina using a large substrate instead of powder, as taught by Cramer. Using a large substrate is better than using a fine powder because the grinding required to make the powder before processing is costly and complicated (Csordas, col. 1, lines 27-47).

8. Neither Cramer nor Csordas teaches that the surface of the aluminum substrate is abraded, as required by claim 41.

9. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to abrade the surface of the aluminum or aluminum alloy before contacting it with the amalgam, as required by claim 41. One would have been motivated to add such a step to the process of Cramer because Cramer teaches that the surface to be contacted is very pure. It is well known in the use of pure aluminum substrates that a layer of oxidation is easily formed on the surface of pure aluminum. Therefore, it would be useful to remove the layer of oxidation shortly before contacting the surface with the amalgam by abrading or some other chemical or physical method which is well known in the art.

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10. Claims 47, 48, 56, 57, 62, 65-82, 85-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cramer in view of Csordas further in view of Murrell (US 4778779).

11. Murrell teaches a method of forming a catalyst comprising silica supported on the surface of alumina which is prepared by compositing particles of silica with the alumina and steaming the composite at high temperature of at least 500 degrees and preferably at least 700 degrees Celsius, as required by claims 56, 57, 62, 65-68, 71-73, 81, 82 and 85 (col. 2, lines 44-48).

12. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to combine the alumina producing method of Cramer in view of Csordas with the heat and impregnation teachings of Murrell, as required by claims 56, 57, 62, 65-68, 72, 81 and 82. One would have been motivated to make this combination because Murrell is an improved method of modifying micron sized alumina particles and Cramer in view of Csordas also teaches small particles as an end product. In addition, Cramer teaches controlling the temperature of the alumina-forming reaction.

13. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to use the high temperature required by claims 67 and 74 and to use hydrogen as a reducing agent as required by claims 75 and 89. One would have been motivated to increase the temperature because it is well known in the art that increasing temperature is a general way of decomposing or reducing inorganic compounds such as salts. Also, it is well known that hydrogen is a preferred reducing agent, as required by claim 75.

14. Also, Cramer, Csordas nor Murrell teaches that the particular noble metal used is silver in the amounts required by claims 47, 48 and 88.

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15. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to use about 40% silver in place of the platinum group metal taught by Cramer, as required by claims 47, 48 and 88. One would have been motivated to use silver instead of platinum because it is well known that silver may be used as a catalyst for some chemical processes, which is the object of Cramer. Also, silver is closely related to platinum in that it is one of the transition metals, which are commonly interchangeable in inorganic chemistry applications.

16. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to combine the method of the teachings of Cramer in view of Csordas further in view of Murrell with the use of a polymer or carbon as the compound for impregnating the alumina, as required by claims 69, 70, 76-80, 86 and 87. One would have been motivated to make this combination because it is well known in the art to use elemental carbon to strengthen metal substrates, such as in the production of steel from iron and carbon, and polymers are also well known in the art to give a metal substrate desired properties such as insulating or conductive properties as well as flexibility and other structural properties. Graphite and hydrocarbon cracking are two well known ways of obtaining elemental carbon. Styrene ethylene and vinyl chloride are some of the most widely used monomers in polymer production. Polymerizing the monomers contained in the substrate is an inherent step involved in the formation of polymers in the substrate.

17. Neither Cramer, Csordas nor Murrell teach the use of the specific silica or tetraalkoxysilane, as required by claims 58, 63 and 64.

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18. Claims 58, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cramer in view of Csordas further in view of Murrell further in view of Davis (US 5187138).

19. Davis teaches a catalyst which has a Group VIII metal on an alumina support that is surface treated with at least 0.5 wt% silica or silica precursor, as required by claims 56 and 57 (abstract). The metals are impregnated or added onto the support as metal salts or acids, such as nickel or cobalt nitrate, as required by claims 64, 71 and 73 (col. 3, lines 41-45).

Tetraalkoxysilane is a preferred soluble silica containing compound, as required by claims 58 and 63.

20. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to combine the specific silica precursor and metal salts of Davis with the process of Cramer in view of Csordas further in view of Murrell, as required by claims 58, 63 and 64. One would have been motivated to make this combination because tetraalkoxysilane is a well known silica containing compound and it is used with such catalysts precursors as chloroplatinic acid, which is the preferred catalyst precursor taught by Cramer.

21. Neither Cramer, Csordas, Davis nor Murrell teach heating the formed substrate with acid or base, as required by claims 54, 55, 59-61, 83 and 84.

22. Claims 54, 55, 59-61, 83 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cramer in view of Csordas further in view of Murrell further in view of Puskas (US 4151267).

23. Puskas teaches a process for producing alumina from aluminum metal by stripping the oxide layer with acidic aqueous medium before reacting the surface to form alumina (abstract). It is known that a purity of 99.99% or better is expected from the alumina starting material, as



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required by claim 45 (col. 1, lines 13-16). In making high purity alpha alumina, the wet hydrated alumina is subjected to heating in an acidic solution, as required by claims 54, 55, 59, 83 and 84 (col. 2, lines 14-45). Hydrochloric acid may be contacted with the substrate, as required by claim 60 (col. 3, lines 1-14). Ammonium hydroxide may be introduced to the substrate, as required by claim 61 (col. 3, lines 15-18).

24. It would have been obvious to a person ordinarily skilled in the art at the time of the invention to modify the preparation method of Cramer in view of Csordas further in view of Murrell to include that the aluminum is very pure and heating the formed substrate with acid or base, as required by claims 45, 54, 55, 59-61, 83 and 84. One would have been motivated to make such a modification because Csordas teaches forming alpha alumina and Puskas teaches an improved method for forming the same type of alumina.

### *Conclusion*

Claims 41-45 and 47-89 are rejected.

Applicant's amendment necessitated the new grounds of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Schiro whose telephone number is 571-270-5345. The examiner can normally be reached on Monday-Friday from 8:30 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached at 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan Schiro  
Art unit 1792

/Michael Barr/

Supervisory Patent Examiner, Art Unit 1792